

correspondingly greater. It is, of course, evident that the determination of small quantities of blood in the stomach does not give us a diagnostic sign, but Boas believes it is an important addition to our methods of diagnosis. It may help us to distinguish doubtful cases of ulcer from gastric neuroses, and if it be a question of carcinoma the great frequency of the presence of blood in this condition is in sharp contrast to the fact that in chronic anacid gastritis, as well as in gastric neuroses, no blood has been found. Inasmuch, however, as ulceration which occurs in the majority of all cases of carcinoma is not a very early symptom, the presence of blood in most instances will hardly help us to an early diagnosis. Boas further raises the question as to whether the constant loss of small quantities of blood may not play an important part in the development of the so-called carcinoma cachexia.

SURGERY.

UNDER THE CHARGE OF

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The Advantages and Disadvantages of Drainage after Abdominal Operations.—ROBB (*Journal of the American Medical Association*, July 6, 1901) reports two series of cases, in the first of which there were 114 and in the second 108 consecutive unselected abdominal sections without a death. In a paper published in 1890 the author summarizes the indications for drainage as follows: 1. To provide a means of escape for the serous oozing which follows the separation of broad adherent surfaces. 2. To guard against septic peritonitis from retained pus from the tube, ovary, or other viscus. 3. To remove fluid in cases of persistent capillary hemorrhage. 4. To provide against hemorrhage in cases of hysterectomy when the pedicle is dropped. 5. To drain the peritoneal cavity and starve out the disease in cases of chronic or tubercular peritonitis. The following objections to the insertion of drainage-tubes have been formulated by Welch: "1. They tend to remove bacteria which may have gotten into a wound from the bactericidal influence of the tissues and animal juices. 2. Bacteria may travel by continuous growth or in other ways down the sides of the drainage-tubes, and so penetrate into a wound which they otherwise would not enter. We have repeatedly been able to demonstrate this mode of entrance into a wound of the white staphylococcus found so commonly in the epidermis. The danger of leaving any part of the drainage-tube exposed to the air is too evi-

dent to require mention. 3. The changing of dressings necessitated by the presence of drainage-tubes increases in proportion to its frequency the chances of accidental infection. 4. The drainage-tube keeps asunder tissues which might otherwise immediately unite. 5. Its presence as a foreign body is an irritant and increases exudation. 6. The withdrawal of tubes left for any considerable time in wounds breaks up forming granulations—a circumstance which both prolongs the process of repair and opens the way for infection. Granulation tissue is an obstacle to the invasion of pathogenic bacteria from the surface, as has been proved by experiment. 7. After the removal of the tube there is left a track prone to suppurate and often slow in healing.” To these Halsted has added: 8. “Tissues which have been exposed to the drainage-tube are suffering from an insult which more or less impairs their vitality and hence their ability to destroy or inhibit organisms.”

But beside increasing the chances of infection, drainage not infrequently gives rise to various post-operative complications. Of these Clark mentions: 1. Obstruction of the bowel. 2. Fecal fistulæ. 3. Vesical complications. 4. Post-operative herniæ. It is a well-known fact, and one proved by the most conclusive experiments, that under normal conditions the peritoneum can dispose of pyrogenic organisms in no inconsiderable quantities without the occurrence of peritonitis. Nor must it be forgotten that drainage does not by any means always remove all foreign fluids and infectious matter, so that in not a few cases its employment will offer all the many disadvantages referred to above without accomplishing the main object. Clark has noted that the introduction of drainage material handicaps the peritoneum in three ways: 1. The normal peritoneal currents are disturbed, consequently the circulation of fluids and foreign matter toward the diaphragm is retarded. 2. A reactive inflammation is set up about the drain, limiting and impeding the action of the peritoneum. 3. Within a few hours the general peritoneum is cut off from all participation in the work of absorption by the wall of adhesions around the drain. In place of the natural agencies the work is thrown upon an agent which at best can only remove the fluid from a small pocket.

When gauze is used it soon becomes choked by the serous or bloody fluid which fills up its meshes and quickly coagulates. A limited quantity of fluid will be removed during the first two hours, but after that the drain acts like a plug, by preventing the outflow of fluid, which then accumulates in the dependent pockets.

The methods for prevention or the removal of infective material without the employment of drainage may be summarized as follows: 1. A thoroughly aseptic technique. 2. The controlling of all hemorrhage and oozing as far as possible. 3. Careful manipulation, so that all unnecessary bruising of the tissues is avoided. 4. A perfect toilet of the peritoneal cavity. 5. The removal as far as possible of infectious foci. 6. The use of irrigations with salt solution. 7. If necessary the reopening and thorough cleansing of the cavity. 8. Proper after-care of the patient. The author states that he has used drainage only once in 222 consecutive cases, and in this case the only reason that it was used was that there was a large pus sac present, communicating with the vagina and peritoneal cavity, which it was impossible

to remove. In the author's two series of 222 cases, he reports finding pus in 65, or 28 per cent. After a wide experience before 1893, with drainage, and practically not having used it since then, the author believes that patients, as a rule, do very much better if drainage is not used. Not only have the immediate results been better, but the ultimate results, such as the occurrence of hernia and intestinal adhesions, have been avoided.

The Treatment of Abdominal Aortic Aneurism by a Preliminary Exploratory Coeliotomy and Peritoneal Exclusion of the Sac, followed at a Later Sitting by Wiring and Electrolysis.—MATAS (*American Medicine*, June 29, 1901) states that of the fifteen reported cases treated by this method all but three have died. A careful examination of the histories of these three cured cases tends to bear out the conclusion that aneurisms which originated low down on the abdominal aortic tract, especially below the superior mesenteric, all other conditions being equal, are much more favorable for attack by this method than those seated higher up in the celiac area. The objections to this method of treatment are: 1. The cure of the aneurism may lead to the death of the patient by obliterating the orifice of important visceral arteries. This is most likely to occur in dealing with aneurisms of the upper or celiac division of the abdominal aortic tract—i. e., in about 50 per cent. of the cases. 2. Secondary rupture of the sac from the strain put upon weak portions of the sac in multilocular aneurisms after partial coagulation of the contents has taken place is particularly likely to occur in subjects of general endarteritis with atheroma. 3. Escape of wire through a large aneurismal orifice into the lumen of the aorta, with migration upward into the heart, leading to perforation, traumatic endarteritis, endocarditis, with the formation of secondary thrombi and emboli. 4. Danger of perforating the sac by stiff wire or by overcrowding the sac with too much wire. 5. Danger of extension of clot from the coagulum in the aneurism to the main artery, leading to fatal blockade at the bifurcation, with gangrene of the lower extremities. 6. Danger of rupture of sac from sudden withdrawal of abdominal support and displacement of adherent organs in the course of the exploratory laparotomy. 7. Danger of mistaking a fusiform for a sacciform aneurism. 8. Danger from emboli and thrombi following incomplete coagulation of the blood in the sac (a very rare and practically unknown occurrence in abdominal cases). 9. Danger of shock. 10. Danger of sepsis. In the presence of this formidable array of dangers which beset the application of this method, one must ask what are the conditions, if any, which are favorable to its successful application? Theoretically possible, but clinically rare, are the following conditions: (1) The aneurism should be saccular; (2) it should be unilocular; (3) it should be provided with fairly strong, resisting walls; (4) the patient should be young or middle-aged, fairly healthy, and free from general endarteritis and atheroma; (5) the aneurismal orifice communicating the sac with the lumen of the parent artery should be small; (6) the aneurismal sac should spring from the lower, inframesenteric division of the artery, preferably between the origin of the superior mesenteric and the bifurcation; (7) if given off from the celiac region the orifice should be situated on the posterior or lateral wall of the aorta. With these ideal conditions, and with a perfect